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## NOTICE OF ALLOWANCE AND FEE(S) DUE

27667 7590 03/31/2008

HAYES SOLOWAY P.C.  
3450 E. SUNRISE DRIVE, SUITE 140  
TUCSON, AZ 85718

EXAMINER	
ROE, JESSEE RANDALL	
ART UNIT	PAPER NUMBER
1793	

DATE MAILED: 03/31/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,641	04/21/2004	James C. Withers	MER 03.01	5332

TITLE OF INVENTION: THERMAL AND ELECTROCHEMICAL PROCESS FOR METAL PRODUCTION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$720	\$300	\$0	\$1020	06/30/2008

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

## PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax (571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

27667 7590 03/31/2008

**HAYES SOLOWAY P.C.**  
**3450 E. SUNRISE DRIVE, SUITE 140**  
**TUCSON, AZ 85718**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

### Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the **Mail Stop ISSUE FEE** address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,641	04/21/2004	James C. Withers	MER 03.01	5332

TITLE OF INVENTION: THERMAL AND ELECTROCHEMICAL PROCESS FOR METAL PRODUCTION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$720	\$300	\$0	\$1020	06/30/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
ROE, JESSEE RANDALL	1793	205-367000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list  
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,  
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 \_\_\_\_\_  
 2 \_\_\_\_\_  
 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent):  Individual  Corporation or other private group entity  Government

4a. The following fee(s) are submitted:

Issue Fee  
 Publication Fee (No small entity discount permitted)  
 Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

A check is enclosed.  
 Payment by credit card. Form PTO-2038 is attached.  
 The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.  b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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27667	7590	03/31/2008	EXAMINER	
HAYES SOLOWAY P.C. 3450 E. SUNRISE DRIVE, SUITE 140 TUCSON, AZ 85718				ROE, JESSEE RANDALL
ART UNIT		PAPER NUMBER		
1793				DATE MAILED: 03/31/2008

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 393 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 393 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/828,641	WITHERS ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jessee Roe	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to the Reply filed 4 January 2008.
2.  The allowed claim(s) is/are 1,11,12,54,55,58-61,64-66,76,77,85,89-95 and 110-119.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All
  - b)  Some\*
  - c)  None
  1.  Certified copies of the priority documents have been received.
  2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 26 March 2007 & 2 November 2007
4.  Examiner's Comment Regarding Requirement for Deposit of Biological Material
5.  Notice of Informal Patent Application
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

/John P. Sheehan/  
Primary Examiner, Art Unit 1793



**DETAILED ACTION*****Status of the Claims***

Claims 1, 11-12, 16, 26, 28-29, 32-45, 47-55, 58-61, 64-66, 76-77, 81-86, 89-95, and 106-119 are pending wherein claims 1, 54, 60, 66, 110, and 112 are amended; claims 2-10, 13-15, 17-25, 27, 30-31, 46, 56-57, 62-63, 67-75, 78-80, 87-88, and 96-105 are canceled; and claims 16, 26, 28-29, 32-45, 47-53, 81-84, 86, and 106-109 are withdrawn from consideration.

***Status of Previous Rejections***

The previous rejections of claims 1, 11-12, 54-55, 60-61, 66, 76-77, 89, 93, 110-114, and 117 under 35 U.S.C. 103(a) as being unpatentable over Fray et al. (WO 99/64638) alone, or alternatively in view of Westfall (US 5,215,631) is withdrawn in view of the Applicant's arguments and amendments to the claims.

The previous rejection of claims 58-59 and 64-65 under 35 U.S.C. 103(a) as being unpatentable over Fray et al. (WO 99/64638) alone, or alternatively in view of Westfall (US 5,215,631), and further in view of Steinberg (US 2,792,310) is withdrawn in view of the Applicant's arguments and amendments to the claims.

The previous rejection of claim 85 under 35 U.S.C. 103(a) as being unpatentable over Fray et al. (WO 99/64638) alone, or alternatively in view of Westfall (US 5,215,631), and further in view of the ASM Handbook Volume 7 is withdrawn in view of the Applicant's arguments and amendments to the claims. The previous rejections of claims 89-95 and 114-119 under 35 U.S.C. 103(a) as being

unpatentable over Fray et al. (WO 99/64638) alone, or alternatively in view of Westfall (US 5,215,631), and further in view of Slatin (US 3,137,641) is withdrawn in view of the Applicant's arguments and amendments to the claims. The previous rejection of claims 1, 11-12, 54-55, 60-61, and 110-111 under 35 U.S.C. 103(a) as being unpatentable over Ward Close et al. (US 2003/0057101) alone, or alternatively in view of Westfall (US 5,215,631) is withdrawn in view of the Applicant's arguments and amendments to the claims. The previous rejection of claims 58-59 and 64-65 under 35 U.S.C. 103(a) as being unpatentable over Ward Close et al. (US 2003/0057101) alone, or alternatively in view of Westfall (US 5,215,631), and further in view of Steinberg (US 2,792,310) is withdrawn in view of the Applicant's arguments and amendments to the claims. The previous rejection of claim 85 under 35 U.S.C. 103(a) as being unpatentable over Ward Close et al. (US 2003/0057101) alone, or alternatively in view of Westfall (US 5,215,631), and further in view of the ASM Handbook Volume 7 is withdrawn in view of the Applicant's arguments and amendments to the claims.

***Information Disclosure Statement***

US Patent Publication 205/0034561 as listed on the Information Disclosure Statement is incorrect. The correct number for this US Patent Publication is US 2005/0034561. The document has been considered and is referenced in the PTO-892 attached herewith.

***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Olson (US 2,917,440).

***Allowable Subject Matter***

Claims 1, 11-12, 54-55, 58-61, 64-66, 76-77, 85, 89-95, and 110-119 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

In regards to claims 1, 60, 66, 110, and 112, neither Fray et al. (WO '638), Ward Close et al. ('101), nor Olson ('440) teach dissolving a titanium oxide/carbon composite in a molten salt electrolyte and forming titanium metal at a cathode. The instant invention distinguishes from the prior art reference Olson ('440) in that Olson ('440) teaches carbon withdrawal from the titanium alloy in the form of carbon monoxide by an electric furnace prior to the introduction of the titanium alloy into the molten salt electrolyte (Figure 1 and col. 2, lines 27-48). Therefore, the prior art does not teach or suggest dissolving a titanium oxide/carbon composite in a molten salt electrolyte to form titanium metal.

***Election/Restrictions***

This application is in condition for allowance except for the presence of claims 16, 26, 28-29, 32-45, 47-53, 81-84, 86, and 106-109, of which claims 16, 26, 28-29 and 32-35 directed to an electrolytic cell; claims 36-45 and 52-53

directed to an anode for an electrolytic cell; claim 47 directed to a molten salt electrolyte comprising a eutectic of sodium chloride, lithium chloride, and potassium chloride; claim 48 directed to a molten salt electrolyte comprising a eutectic of potassium fluoride, sodium fluoride, and lithium fluoride; claim 49 directed to molten salt electrolyte comprising a eutectic of sodium chloride, calcium chloride, and potassium chloride; claims 50-51 drawn to a metal; claims 81-84 and 86 directed to a method of purifying rutile; claim 106 directed to a molten salt electrolyte mixture; and claims 107-109 directed to a method of producing a metal by reducing a cathode non-elected without traverse (see page 13 of the Office Action of 11 October 2006 and page 17 of the Remarks filed 16 January 2007).

***Examiner's Amendment***

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Cancel claims 16, 26, 28-29, 32-45, 47-53, 81-84, 86, and 106-109.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jessee Roe/  
Examiner, Art Unit 1793

/John P. Sheehan/  
Primary Examiner, Art Unit 1793